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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,441	09/19/2004	David Famolari	004900.00025	5440

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EXAMINER	
SAFAIPOUR, BOBBAK	
ART UNIT	**PAPER NUMBER**
2618	

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/711,441	FAMOLARI, DAVID	
	Examiner	Art Unit	
	Bobbak Safaipour	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4-5 and 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by **Bahl (United States Patent Application Publication #2002/0095486 A1).**

Consider **claim 4**, Bahl discloses a method for updating a table in a wireless access point comprising the steps of determining when an entry for a station had been last updated; determining if a time for said last update for said station is greater than a threshold; and updating said entry for said station (paragraph 45).

Consider **claim 5**, and **as applied to claim 4 above**, Bahl discloses sending survey packets to said station (paragraph 26).

Consider **claim 16**, Bahl discloses a system for updating a table in a wireless access point comprising means for determining when an entry for a station had been last updated; means for determining if a time for said last update for said station is greater than a threshold; and means for updating said entry for said station (paragraph 45).

Consider **claim 17**, and **as applied to claim 16 above**, Bahl discloses means for sending survey packets to said station (paragraph 26).

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 8 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by **Goransson et al (United States Patent Application Publication # 2004/0121810 A1)**.

Consider **claim 8**, Goransson et al disclose a method for adjusting beams comprising the steps of: determining if a station is covered by a basis beam; adjusting said basis beam to cover said station. (paragraph 26)

Consider **claim 20**, Goransson et al disclose a system for adjusting beams comprising: means for determining if a station is covered by a basis beam; means for adjusting said basis beam to cover said station. (paragraph 26)

Claims 25 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by **Park et al (United States Patent Application Publication #7,043,272 B2).**

Consider **claim 25**, Park et al disclose an access point comprising:

an antenna array; (figure 1, 101)

one or more processes that receive packets from said antenna, said packets generated by mobile stations, said one or more processors decoding a first portion of said packets, determining the angle of arrival of said packets, and outputting antenna array weights to said antenna array to

steer a select beam to cover said mobile stations. (abstract; fig. 7; col. 6, line 24 - col. 7, line 7; col. 8, lines 45-63)

Consider **claim 26**, and **as applied to claim 25 above**, Park et al disclose the claimed invention wherein said processor further outputs antenna array weights for adjusting a basis beam generated by said antenna array. (col. 6, line 24 - col. 7, line 7; col. 8, lines 45-63)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goransson et al (United States Patent Application Publication # 2004/0121810 A1)** in view of **Guo (United States Patent # 7,130,663 B2).**

Consider **claim 1**, Goransson et al disclose a method for adjusting beams in a wireless communication system comprising the steps of: forming a basis beam and forming a select beam to cover said mobile station (paragraph 26; Downlink beamforming using a single antenna array forming two beams towards each mobile user.).

Goransson et al fail to disclose a method for listening for a transmission by a mobile station.

However, Guo discloses as known in the art wherein each base station is allocated a certain number of radio frequencies which are used to transmit signals to and receive signals from mobile units in the cell (col, lines 24-31).

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Guo into the teachings of Goransson et al in order to control the beam pattern of a transmission beam.

Consider **claim 2**, and **as applied to claim 1 above**, Goransson et al, as modified by Guo, disclose terminating said select beam when said mobile station is no longer transmitting.

Nonetheless, the Examiner takes Official Notice of the fact that is notoriously well known in the art to terminate the select beam when said mobile station is no longer transmitting to reduce interference.

Consider **claim 3**, and **as applied to claim 1 above**, Goransson et al, as modified by Guo, further disclose determining antenna weights for said basis beam and determining antenna weights for said select beam (Goransson et al: figure 5, paragraphs 20, 26, 41).

Consider **claim 13**, Goransson et al disclose a system for adjusting beams in a wireless communication system comprising: means for forming a basis beam and means for forming a

select beam to cover said mobile station (paragraph 26; Downlink beamforming using a single antenna array forming two beams towards each mobile user.).

Goransson et al fail to disclose a system for means for listening for a transmission by a mobile station.

However, Guo discloses as known in the art wherein each base station is allocated a certain number of radio frequencies which are used to transmit signals to and receive signals from mobile units in the cell (col, lines 24-31).

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Guo into the teachings of Goransson et al in order to control the beam pattern of a transmission beam.

Consider **claim 14**, and **as applied to claim 13 above**, Goransson et al, as modified by Guo, disclose means for terminating said select beam when said mobile station is no longer transmitting.

Nonetheless, the Examiner takes Official Notice of the fact that is notoriously well known in the art to terminate the select beam when said mobile station is no longer transmitting to reduce interference.

Consider **claim 15**, and **as applied to claim 13 above**, Goransson et al, as modified by Guo, further disclose means for determining antenna weights for said basis beam and means for determining antenna weights for said select beam (Goransson et al: figure 5, paragraphs 20, 26, 41).

Claims 6-7 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bahl (United States Patent Application Publication #2002/0095486 A1)** in view of **Park et al (United States Patent Application Publication #7,043,272 B2).**

Consider **claim 6**, and **as applied to claim 4 above**, Bahl discloses the claimed invention except wherein said table includes angle of arrival information.

However, Park et al discloses as known in the art an apparatus for forward beamforming using feedback of multipath information wherein the signal angle of arrival range is estimated by measuring the received signal power for the respective angle areas and comparing the measured power with a predetermined threshold value. (col. 6, line 24 - col. 7, line 7)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for forward beamforming using a feedback of multipath information.

Consider **claim 7**, and **as applied to claim 4 above**, Bahl discloses the claimed invention except for wherein said table includes angle of arrival information computed from synchronization information received in a signal from said station.

However, Park et al disclose as known in the art a base station that estimates an angle of arrival (AOA) range of a user signal from reverse link received data and calculates a plurality of beamforming weights steering the estimated AOA range. (abstract; col. 6, line 24 - col. 7, line 7)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for forward beamforming using a feedback of multipath information.

Consider **claim 18**, and **as applied to claim 16 above**, Bahl discloses the claimed invention except wherein said table includes angle of arrival information.

However, Park et al discloses as known in the art wherein the signal angle of arrival range is estimated by measuring the received signal power for the respective angle areas and comparing the measured power with a predetermined threshold value. (col. 6, line 24 - col. 7, line 7)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for forward beamforming using a feedback of multipath information.

Consider **claim 19**, and **as applied to claim 16 above**, Bahl discloses the claimed invention except for wherein said table includes angle of arrival information computed from synchronization information received in a signal from said station.

However, Park et al disclose as known in the art a base station that estimates an angle of arrival (AOA) range of a user signal from reverse link received data and calculates a plurality of beamforming weights steering the estimated AOA range. (abstract; col. 6, line 24 - col. 7, line 7)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for forward beamforming using a feedback of multipath information.

Claims 9-12 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Goransson et al (United States Patent Application Publication # 2004/0121810 A1)** in view of **Park et al (United States Patent Application Publication #7,043,272 B2).**

Consider **claim 9**, and **as applied to claim 8 above**, Goransson et al disclose the claimed invention except for wherein an angle of arrival of said station is determined from header information contained in a packet received from said station and wherein said determining step determines if said station is covered by comparing said angle of arrival of said station with angles covered by said basis beam.

However, Park et al disclose as known in the art forward beamforming weight controller 207 stores the calculated transmission beamforming weights, which steer the corresponding angle areas divided by the arrival angle range estimator 204, and transfers the beamforming weights steering the estimated AOA range to the forward beamformer and modulator 206 (abstract; col. 6, line 24 - col. 7, line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for down-converting and digitizing the signal.

Consider **claim 10**, Goransson et al disclose a method for adjusting beams comprising the step of forming a select beam to cover said station (paragraph 26), but fails to disclose decoding a first part of a transmitted packet to determine decoding a first part of a transmitted packet to determine the angle of arrival of a station that transmitted said packet; forming a select beam to cover said station based on said angle of arrival; and decoding a second part of a transmitted packet as received via said select beam.

However, Park et al disclose as known in the art a base station estimating an angle of arrival (AOA) range of a user signal from reverse link received data and calculates a plurality of beamforming weights steering the estimated AOA range. Then, the base station transmits a user pilot signal by sequentially using the plurality of beamforming weights at different time areas through a control channel to estimate a forward channel conditions. (abstract) Furthermore, Park et al disclose the base station transmits a user pilot signal by sequentially using the beamforming weights steering the estimated AOA range at different time areas. The terminal then calculates a user pilot signal power for each time area and feeds a time area number corresponding to the greatest power back to the base station. The base station identifies the time area number fed back from the terminal, and transmits the data channel signal using a beamforming weight corresponding to that time area number. (fig. 7, col. 8, lines 45-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for forward beamforming using a feedback of multipath information.

Consider **claim 11**, and **as applied to claim 10 above**, Goransson et al, as modified by Park et al, disclose the claimed invention except for updating an angle of arrival table in an access point with said determined angle of arrival information. (Park et al: abstract; col. 6, line 24 - col. 7, line 7; fig. 7, col. 8, lines 45-63)

Consider **claim 12**, Goransson et al disclose a method for adjusting beams comprising the step of adjusting a basis beam to ensure coverage of said station (paragraph 26), but fails to disclose decoding a first part of a transmitted packet to determine decoding a first part of a transmitted packet to determine the angle of arrival of a station that transmitted said packet;

adjusting a basis beam to ensure coverage of said station based on said angle of arrival; and decoding a second part of a transmitted packet as received via said select beam.

However, Park et al disclose as known in the art a base station estimating an angle of arrival (AOA) range of a user signal from reverse link received data and calculates a plurality of beamforming weights steering the estimated AOA range. Then, the base station transmits a user pilot signal by sequentially using the plurality of beamforming weights at different time areas through a control channel to estimate a forward channel conditions. (abstract) Furthermore, Park et al disclose the base station transmits a user pilot signal by sequentially using the beamforming weights steering the estimated AOA range at different time areas. The terminal then calculates a user pilot signal power for each time area and feeds a time area number corresponding to the greatest power back to the base station. The base station identifies the time area number fed back from the terminal, and transmits the data channel signal using a beamforming weight corresponding to that time area number. (fig. 7, col. 8, lines 45-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for forward beamforming using a feedback of multipath information.

Consider **claim 21**, and **as applied to claim 20 above**, Goransson et al disclose the claimed invention except for wherein an angle of arrival of said station is determined from header information contained in a packet received from said station and wherein said determining step determines if said station is covered by comparing said angle of arrival of said station with angles covered by said basis beam.

However, Park et al disclose as known in the art forward beamforming weight controller 207 stores the calculated transmission beamforming weights, which steer the corresponding angle areas divided by the arrival angle range estimator 204, and transfers the beamforming weights steering the estimated AOA range to the forward beamformer and modulator 206 (abstract; col. 6, line 24 - col. 7, line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for down-converting and digitizing the signal.

Consider **claim 22**, Goransson et al disclose a system for adjusting beams comprising: means for forming a select beam to cover said station (paragraph 26), but fails to disclose means for decoding a first part of a transmitted packet to determine decoding a first part of a transmitted packet to determine the angle of arrival of a station that transmitted said packet; and means for forming a select beam to cover said station based on said angle of arrival; and decoding a second part of a transmitted packet as received via said select beam.

However, Park et al disclose as known in the art a base station estimating an angle of arrival (AOA) range of a user signal from reverse link received data and calculates a plurality of beamforming weights steering the estimated AOA range. Then, the base station transmits a user pilot signal by sequentially using the plurality of beamforming weights at different time areas through a control channel to estimate a forward channel conditions. (abstract) Furthermore, Park et al disclose the base station transmits a user pilot signal by sequentially using the beamforming weights steering the estimated AOA range at different time areas. The terminal then calculates a user pilot signal power for each time area and feeds a time area number

corresponding to the greatest power back to the base station. The base station identifies the time area number fed back from the terminal, and transmits the data channel signal using a beamforming weight corresponding to that time area number. (fig. 7, col. 8, lines 45-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for forward beamforming using a feedback of multipath information.

Consider **claim 23**, and **as applied to claim 22 above**, Goransson et al, as modified by Park et al, disclose the claimed invention except means for updating an angle of arrival table in an access point with said determined angle of arrival information. (Park et al: abstract; col. 6, line 24 - col. 7, line 7; fig. 7, col. 8, lines 45-63)

Consider **claim 24**, Goransson et al disclose a system for adjusting beams comprising means for adjusting a basis beam to ensure coverage of said station (paragraph 26), but fails to disclose means for decoding a first part of a transmitted packet to determine decoding a first part of a transmitted packet to determine the angle of arrival of a station that transmitted said packet; and means for adjusting a basis beam to ensure coverage of said station based on said angle of arrival; and decoding a second part of a transmitted packet as received via said select beam.

However, Park et al disclose as known in the art a base station estimating an angle of arrival (AOA) range of a user signal from reverse link received data and calculates a plurality of beamforming weights steering the estimated AOA range. Then, the base station transmits a user pilot signal by sequentially using the plurality of beamforming weights at different time areas through a control channel to estimate a forward channel conditions. (abstract) Furthermore, Park et al disclose the base station transmits a user pilot signal by sequentially using the

beamforming weights steering the estimated AOA range at different time areas. The terminal then calculates a user pilot signal power for each time area and feeds a time area number corresponding to the greatest power back to the base station. The base station identifies the time area number fed back from the terminal, and transmits the data channel signal using a beamforming weight corresponding to that time area number. (fig. 7, col. 8, lines 45-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention in incorporate the teachings of Park et al into the teachings of Bahl for forward beamforming using a feedback of multipath information.

Conclusion

4. Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Bobbak Safaipour whose telephone number is (571) 270-1092. The Examiner can normally be reached on Monday-Friday from 9:00am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Edan Orgad can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Bobbak Safaipour
B.S./bs

November 29, 2006

EDAN ORGAD
PATENT EXAMINER/TELECOMM.

12/5/07